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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/099,632 06/18/98 INSLEY

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EXAMINER

LEO, L

ART UNIT

PAPER NUMBER

3743

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/099,632

Applicant(s)
Insley et al.

Examiner
Leonard R. Leo

Art Unit
3743



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Apr 27, 2001
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 and 31-34 is/are pending in the application.
- 4a) Of the above, claim(s) 6-8, 11, and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 9, 10, 12-24, and 31-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: ☒ approved ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 20 20) ☐ Other: _____

Art Unit: 3743

DETAILED ACTION

Continued Prosecution Application

The request filed on March 26, 2001 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/099,632 is acceptable and a CPA has been established. An action on the CPA follows.

The amendment filed April 27, 2001 has been entered. Claims 1-25 and 31-34 are pending, claims 6-8, 11 and 25 remain withdrawn.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 34 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim depends on a non-existent claim 35.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 3743

Claims 1, 21 and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al (Figures 1-3, column 2, lines 14-19).

Phillips et al discloses all the claimed limitations except the first layer being a polymeric film material.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a polymeric material for the first layer, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. With respect to a film, it would have been obvious to one of ordinary skill in the art to employ a plate having any desired thickness to achieve a desired heat exchange or pressure strength.

Regarding claim 31, the recitation of “microreplicated” is considered to be a method limitation in an apparatus claim, which bears no patentable weight in this instance.

Regarding claims 32-33, the recitations of “thermally conductive” and “flexible” are relative terms. Any material is thermally conductive and flexible to an extent, especially when the material is relatively thin.

Claims 1, 21-23 and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bae (Figures 2-3, column 5, lines 22-24 and column 6, lines 13-14).

Bae discloses all the claimed limitations except the first layer being polymeric film material.

Art Unit: 3743

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a polymeric material for the first layer, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. With respect to a film, it would have been obvious to one of ordinary skill in the art to employ a plate having any desired thickness to achieve a desired heat exchange or pressure strength.

Regarding claim 31, the recitation of “microreplicated” is considered to be a method limitation in an apparatus claim, which bears no patentable weight in this instance.

Regarding claims 32-33, the recitations of “thermally conductive” and “flexible” are relative terms. Any material is thermally conductive and flexible to an extent, especially when the material is relatively thin.

Claims 1-5, 9-10, 12-23 and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosman et al in view of Bae.

Rosman et al discloses all the claimed limitations except a film and a specific hydraulic radius and channel length to hydraulic radius aspect ratio.

Bae discloses a heat exchanger comprising a first layer 31b having a plurality of flow channels 30 and a cover layer 31a; wherein the channels have a hydraulic diameter of about 0.01 to 0.02 inch (where hydraulic radius is half of the hydraulic diameter, 0.005 to 0.01 inch or 127 to 254 μm) and an aspect ratio of about 10 to 1200 for the purpose of achieving a desired heat exchange.

Art Unit: 3743

Since Rosman et al and Bae are both from the same field of endeavor and/or analogous art, the purpose disclosed by Bae would have been recognized in the pertinent art of Rosman et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Rosman et al a hydraulic radius of about 127 to 254 μm and an aspect ratio of about 10-1200 for the purpose of achieving a desired heat exchange as recognized by Bae. With respect to a film, it would have been obvious to one of ordinary skill in the art to employ a plate having any desired thickness to achieve a desired heat exchange or pressure strength.

Regarding claim 14, cross flow is a well known alternate of parallel flow.

Regarding claims 15-20, as applied above, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claim 31, the recitation of "microreplicated" is considered to be a method limitation in an apparatus claim, which bears no patentable weight in this instance.

Regarding claim 33, the recitation of "flexible" is a relative term. Any material is flexible to an extent, especially when the material is relatively thin.

Claims 14 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosman et al in view of Bae as applied to claims 1-5, 9-10, 12-23 and 31-33 above, and further in view of Schubert et al.

Art Unit: 3743

The combined teachings of Rosman et al and Bae lacks perpendicular flow channels in adjacent layers.

Schubert et al discloses a heat exchanger comprising a plurality of layers having a plurality of flow channels 14d; wherein the flow channels in adjacent layers are perpendicular for the purpose of achieving a desired heat exchange.

Since Rosman et al and Schubert et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Schubert et al would have been recognized in the pertinent art of Rosman et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Rosman et al perpendicular flow channels in adjacent layers for the purpose of achieving a desired heat exchange as recognized by Schubert et al.

Regarding claim 24, Figure 4 of Schubert et al discloses an upper cover layer forming the flow channels 14b with a lower first layer in indirect heat exchange relationship with the upper adjacent flow channels.

Response to Arguments

Regarding applicants' remarks with respect to Phillips and Bae, the Examiner agrees that the references do not disclose a polymeric material. However, applicants fail to show why use of polymeric material renders the claim novel or patentable over the art of record. Applicants fail to argue the case law of *In re Leshin*, where employing a known material for its known advantageous properties requires only routine skill in the art. For example, a

Art Unit: 3743

polymeric material would be less corrosive to certain working environments and working fluids. Both Phillips and Bae disclose structure similar to the instant invention as claimed and would function in a similar manner, aside from a specific material. The recitation of a “film” is merely a term intimating a relative dimension. However, if not claimed in some manner, the dimensional relations are believed to require only routine skill in the art. One of ordinary skill in the art recognizes that employing a desired material thickness affects heat exchange, structural strength and rigidity. Further regarding Phillips et al, upon further review claim 21 is rejected, since the recitation of “media” is not exclusive to fluid media, rather any object to receive heat exchange.

Regarding applicants’ remarks with respect to the combination of Rosman et al and Bae, Rosman et al discloses a polymeric material as claimed. The secondary reference of Bae teaches the hydraulic radius and aspect ratio as claimed, which applicants do not dispute. Clearly, one of ordinary skill in the art would employ the teachings of Bae to achieve optimal heat exchange in the device of Rosman et al. This ordinary skill is further demonstrated in Rosman et al (column 8, lines 41-45), which applicants dismiss as “a general, cursory statement.” While the disclosure of Rosman et al in this respect does not disclose applicants’ specific quantitative claim limitations, it clearly sets forth the level of ordinary skill in the art. Applicants’ claimed quantitative limitations are not novel and unobvious as demonstrated by Phillips et al and Bae. As noted above, the recitation of a “film” is merely a term intimating a relative dimension.

Art Unit: 3743

The rejections in view of Schubert et al are deemed correct for lack of any arguments by applicants, other than standing or falling with the rejections in view of Rosman et al and Bae.

In conclusion, applicants' arguments with respect to the applied references are unpersuasive, in light of the broad language being claimed.

Conclusion

Any inquiry of a general nature, relating to the status of this application or clerical nature (i.e. missing or incomplete references, missing or incomplete Office actions or forms) should be directed to the Technology Center 3700 Customer Service whose telephone number is (703) 306-5648.

Any inquiry concerning this Office action should be directed to Leonard R. Leo whose telephone number is (703) 308-2611.



LEONARD R. LEO
PRIMARY EXAMINER
ART UNIT 3743

June 30, 2001